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(54) Title: METHOD FOR DETERMINING THE AMOUNT OF TEMPLATE NUCLEIC ACID PRESENT IN A SAMPLE

(57) Abstract: A method for determining the amount of template nucleic acid present in a sample comprising the steps of: i) bringing into association with the sample all the components necessary for nucleic acid amplification, and all the components necessary for a bioluminescence assay for nucleic acid amplification and subsequently: ii) performing the nucleic acid amplification, iii) monitoring the intensity of light output from the bioluminescence assay; and iv) determining the amount of template nucleic acid present in the sample.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/000127

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 01/42496 A (DZIEGLEWSKA HANNA ;PYROSEQUENCING AB (SE); LUNDEBERG JOAKIM (SE);) 14 June 2001 (2001-06-14)</p> <p>page 14, line 17 - page 16, line 6; page 43, line 30 - page 44, line 33; figures 6-7; claims 1-11, 22-23</p> <p>---</p> <p>-/--</p>	<p>1-7, 14, 15, 22-25, 28, 29, 32, 34, 36, 37</p>



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/000127

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>NYGREN M ET AL: "QUANTIFICATION OF HIV-1 USING MULTIPLE QUANTITATIVE POLYMERASE CHAIN REACTION STANDARDS AND BIOLUMINOMETRIC DETECTION" ANALYTICAL BIOCHEMISTRY, ACADEMIC PRESS, NEW YORK, NY, US, vol. 288, no. 1, 1 January 2001 (2001-01-01), pages 28-38, XP000977141 ISSN: 0003-2697 page 30, right-hand column; page 32, left-hand column, lines 15-18</p> <p>---</p>	1-7,14, 15, 22-25, 28,29, 32,34, 36,37
Y	<p>WO 02/064830 A (MURRAY JAMES AUGUSTUS HENRY ;TISI LAURENCE CARLO (GB); UNIV CAMBRI) 22 August 2002 (2002-08-22) claim 17; examples</p> <p>---</p>	34-36
Y	<p>US 6 258 568 B1 (NYREN PAL) 10 July 2001 (2001-07-10) claim 16</p> <p>---</p>	34-36
A	<p>MORI YASUYOSHI ET AL: "Detection of loop-mediated isothermal amplification reaction by turbidity derived from magnesium pyrophosphate formation" BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, ACADEMIC PRESS, SAN DIEGO, CA, US, vol. 289, no. 1, 23 November 2001 (2001-11-23), pages 150-154, XP002255232 ISSN: 0006-291X cited in the application abstract; page 153, left-hand column, last paragraph; page 154, forlast paragraph</p> <p>---</p>	1-37
A	<p>TABARY T ET AL: "HOMOGENEOUS PHASE PYROPHOSPHATE (PPI) MEASUREMENT (H3PIM). \A NON-RADIOACTIVE, QUANTITATIVE DETECTION SYSTEM FOR NUCLEIC ACID SPECIFIC HYBRIDIZATION METHODOLOGIES INCLUDING GENE AMPLIFICATION" JOURNAL OF IMMUNOLOGICAL METHODS, ELSEVIER SCIENCE PUBLISHERS B.V.,AMSTERDAM, NL, vol. 156, no. 1, 1992, pages 55-60, XP000320297 ISSN: 0022-1759 cited in the application abstract</p> <p>---</p>	1-37

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/000127

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WHITE ET AL: "Improved thermostability of the north american firefly luciferase: saturation mutagenesis at position 354" BIOCHEMICAL JOURNAL, PORTLAND PRESS, LONDON, GB, vol. 319, 1996, pages 343-350, XP002097112 ISSN: 0264-6021 introduction, page 343</p> <p>---</p>	1-37
A	<p>HIGUCHI R ET AL: "KINETIC PCR ANALYSIS: REAL-TIME MONITORING OF DNA AMPLIFICATION REACTIONS" BIO/TECHNOLOGY, NATURE PUBLISHING CO. NEW YORK, US, vol. 11, no. 9, 1 September 1993 (1993-09-01), pages 1026-1030, XP000197685 ISSN: 0733-222X the whole document</p> <p>-----</p>	1-37

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB2004/000127

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☒

In written format

☒

In computer readable form

c. time of filing/furnishing

☐

contained in the international application as filed

☐

filed together with the international application in computer readable form

☒

furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/000127

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0142496	A	14-06-2001	AU 2192801 A	18-06-2001
			WO 0142496 A2	14-06-2001
			US 2003157499 A1	21-08-2003
WO 02064830	A	22-08-2002	CA 2440698 A1	22-08-2002
			EP 1360330 A2	12-11-2003
			WO 02064830 A2	22-08-2002
US 6258568	B1	10-07-2001	AU 5331198 A	17-07-1998
			DE 69713386 D1	18-07-2002
			DE 69713386 T2	30-01-2003
			EP 0946752 A1	06-10-1999
			WO 9828440 A1	02-07-1998
			JP 2001506864 T	29-05-2001
			US 2003104372 A1	05-06-2003